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16. Abstract (MAXIMUM 200 WORDS)  In accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, many Regional Response Teams (RRTs) throughout the country have established pre-approved zones for the In-Situ Burning (ISB) of oil. ISB is generally recognized as a potentially effective means of quickly removing large quantities of oil from the ocean surface to avert possible oil spill impacts to coastal beaches, marshes, and inland resources. However, for a variety of reasons, ISB is a seldom-used response technique, particularly within the offshore environment. Given this background, the U. S. Coast Guard was interested in more clearly understanding the factors that impact the actual use of ISB within one RRT pre-approved, offshore zone.  The U. S. Coast Guard Research and Development Center, with assistance from the Texas General Land Office, the Marine Spill Response Corporation, and the National Response Corporation, has developed a multi-year project, which is designed to evaluate the feasibility of conducting ISB operations within an offshore Galveston, Texas, environment. It involves three field exercises, which are progressive in nature, in order to investigate thoroughly the critical aspects of a safe, efficient, and effective offshore ISB response. This report documents the data, findings, conclusions, and recommendations derived from the first of these three ISB field exercises, which focused on the trial implementation of three presently recognized ISB Operational Procedures.					
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# EXECUTIVE SUMMARY

## Background

When a petroleum spill occurs in the marine environment, one of the response technologies usually considered for use, by the Incident Commander and his staff, is the burning of the petroleum product in-place on the water surface. Some of the Regional Response Teams (RRTs) throughout the country, which are multi-agency, contingency planning groups, have established zones where In-Situ Burning (ISB) is pre-approved as an accepted means for removing oil from the water and thereby averting potential oil spill impacts to coastal beaches, marshes, and in-land resources.

However, ISB is seldom used during actual responses, particularly within the offshore environment. Many factors contribute to this situation. They include, but are not limited to the lack of: (a) a detailed ISB Operational Plan for the specific RRT pre-approval zone, (b) sufficient ISB resources, both equipment and trained personnel, that can be mobilized within the limited ISB “window-of-opportunity,” and (c) an understanding of and confidence in the intimidating *fire-based* ISB technology, including misconceptions relating to the costs and benefits that should be associated with the use of this technology.

Given this background, the Coast Guard was very interested in more clearly understanding the factors that impact the actual use of ISB within one RRT pre-approved offshore zone. As a result, the Coast Guard Research and Development Center (R&DC) assembled an experienced, public-private sector partnership team to evaluate the feasibility of conducting ISB operations within an offshore Galveston, Texas, environment. This ISB Project Team includes the following principal participating organizations: the Texas General Land Office, Marine Spill Response Corporation, National Response Corporation, and Coast Guard Research and Development Center.

This ISB Project Team has developed, and is now implementing, a multi-year plan, in which a series of three increasingly complex ISB exercises will be conducted within an ISB pre-approved zone, located 3 to 5 nautical miles (nm) off the Galveston, Texas coast.

## ISB Project Goal

The goal of this project is to investigate the viability of ISB by striving to make it a “True Operational Tool” for offshore responses, within one USCG-selected response area, by 2002.

## ISB Exercise #1

This report describes the planning, conduct, and results of the first ISB exercise (referred to as Exercise #1 in this report), conducted by the ISB Project Team off Galveston, Texas during April 1999. This exercise involved five vessels, two helicopters, and over fifty people in the conduct and collection of data on promising operational procedures for the containment of floating oil at-sea, as a prelude to burning it effectively. One of the on-scene helicopters provided a real-time video link to the shore-based Exercise Control Center (ECC). Since actual oil could not be

spilled and utilized during this exercise, more than four tons of oranges were used as the “target spilllets” (i.e., segments of oil) for testing the promising operational procedures.

## **Exercise Objective**

The primary exercise objective was to investigate the safe, effective, and efficient implementation of promising ISB Vessel-Fire Boom Operational Procedures, offshore of Galveston, Texas.

## **Conclusions**

The overarching strategy for this project is to develop ISB procedures by conducting three exercises that build on the results and experiences of the previous ones. The results of this exercise have been analyzed and will be incorporated into the plan for Exercise #2. The conclusions are as follows:

1. Galveston ISB Planners should anticipate a minimum time-lag of 6 to 10 hours from Order/Activation to ISB Work Group On-Scene Ready for ISB Operations for an offshore spill, located within a 16-nm transit distance from the Tesoro Facility.
2. Galveston ISB Planners should consider the Independent Task Force Operational Procedure as a lower-priority ISB response tactic for offshore spills. The Independent Task Force Operational Procedure involves pairs of vessels with fire boom, acquiring and towing a spilllet from the slick to a safe burn area for burning, without the assistance of any other vessels.
3. All ISB Planners should continue to consider the Coordinated Task Force Operational Procedure as a potentially promising ISB response tactic for offshore spills. The Coordinated Task Force Operational Procedure involves pairs of vessels with conventional boom, acquiring and towing a spilllet from the slick to a safe burn area, where it is transferred to a pair of vessels with fire boom for the actual burning.
4. Exercises, such as ISB Exercise #1, are an excellent tool for acquiring and building consensus and USCG/State/Industry understanding of the strengths and weaknesses of ISB within the offshore environment.

## **Recommendations**

The following recommendations are made for planning Exercise # 2:

1. Continue to analyze the Coordinated Task Force Operational Procedure during future ISB exercises. Specific focus should be on the J-Release versus Towline Release questions and Return Sprint technique issues. These are the time-consuming elements of the work cycle for the task forces delivering oil to the task force actually burning it.

2. During the next ISB exercise, the investigation of the Funnel Operational Procedure should be given a high priority. This is a procedure in which a very wide-mouth boom configuration is used to drastically increase the oil encountered.
3. Future ISB exercises should utilize *actual fire boom* in order to fully understand its operational requirements and increase the validity of exercise findings.
4. Future ISB exercises should build on the ISB Project Team relationships and Lessons Learned from this exercise. Specifically, they should continue to use:
  - NIIMS ICS for ISB Exercise Management
  - The Hilton Hotel Exercise Control Facility
  - The Tesoro Facility as the ISB Staging Area
  - Oranges as the target spillets (if oil cannot be used).